

(19) World Intellectual Property Organization
International Bureau



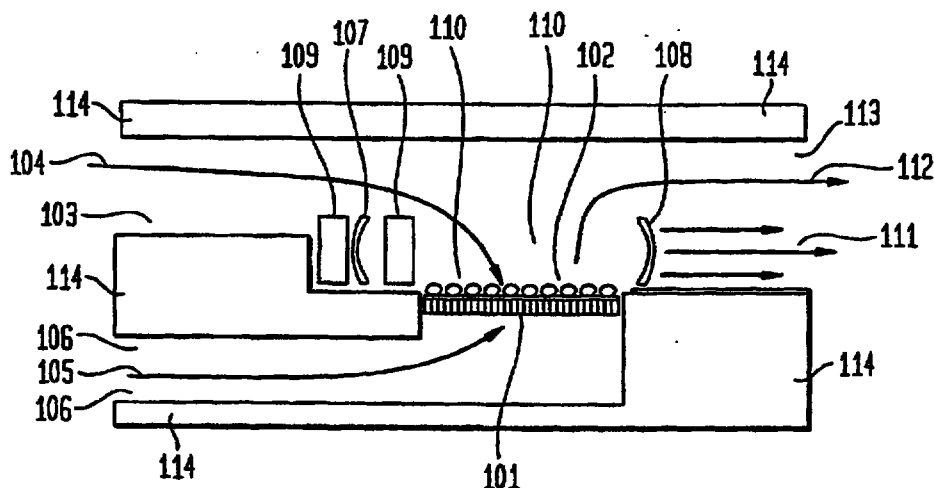
(43) International Publication Date
26 April 2001 (26.04.2001)

PCT

(10) International Publication Number
WO 01/29938 A1

- (51) International Patent Classification⁷: H01S 3/00, 3/14, 3/22, 3/223
- (21) International Application Number: PCT/US00/28930
- (22) International Filing Date: 19 October 2000 (19.10.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/160,527 20 October 1999 (20.10.1999) US
- (71) Applicant: NEOKISMET L.L.C. [US/US]; Suite 1350, 456 Montgomery Street, San Francisco, CA 94104 (US).
- (72) Inventors: ZUPPERO, Anthony, C.; 2631 Buena Terra, Pollock Pines, CA 95726-9456 (US). GIDWANI, Jawahar, M.; 2335 Leavenworth, San Francisco, CA 94133 (US).
- (74) Agents: JACOBS, James, D. et al.; Baker & McKenzie, 805 Third Avenue, New York, NY 10022 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SURFACE CATALYST INFRA RED LASER



(57) Abstract: A process and apparatus are provided for the generation of laser radiation by providing a fuel (105), such as methanol, ethanol, carbon monoxide and/or hydrogen, and air (106) to a catalyst (102), such as platinum, which is located beneath a polychromatic resonant optical cavity formed by laser mirrors (107) and (108). The catalyst surface is flooded with adsorbed fuel radicals, leaving relatively few sites for oxygen adsorption. Under this condition, the oxygen dissociates into two oxygen atoms or free radicals with approximately one electron volt of energy (i.e. "hot atoms"). These "hot atoms" of oxygen find fuel radicals as collision partners and form reaction products that are in their highest vibrational state. A vibrationally inverted population is a prerequisite of stimulated emission of radiation.